

Docket No.: UC0409 US NA  
Application No.: 10/782,357  
Office Action Dated: November 22, 2006

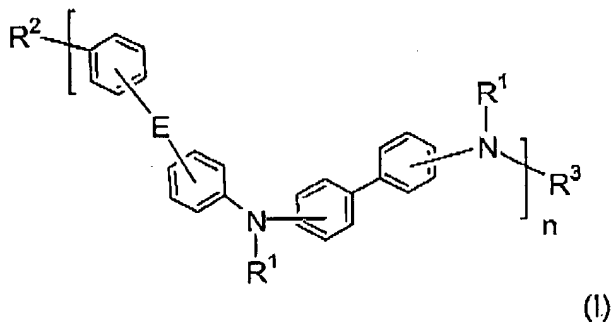
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Patent

This Listing of Claims will replace all prior versions, and listings, of claims in the application.

### Listing of Claims

1 (previously presented). A compound having the formula:



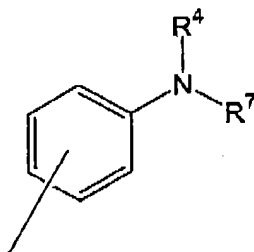
wherein:

$n$  is an integer of at least 1;

$R^1$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms;

$R^3$  is selected from H and  $R^1$ ;

$R^2$  is selected from H,  $R^1$ , alkyl, fluoroalkyl, Cl, Br, I and an arylamino group of formula (II),



wherein  $R^4$  is selected from aryl, H,  $R^1$ , alkyl, and fluoroalkyl;

$R^7$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

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E is selected from O, S,  $(\text{SiR}^5\text{R}^6)_m$  wherein m is an integer of 1 to 20,  $(\text{CR}^5\text{R}^6)_m$  wherein m is an integer of 1 to 20, and combinations thereof, wherein  $\text{R}^5$  and  $\text{R}^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein  $\text{R}^5$  and  $\text{R}^6$  can, when taken together, form a ring, provided that when E is  $(\text{CR}^5\text{R}^6)_m$ , and n is greater than 1 and m is 1, at least one of  $\text{R}^5$  and  $\text{R}^6$  is not hydrogen or a hydrocarbon.

2 (original). The compound of claim 1, and wherein  $\text{R}^5$  and  $\text{R}^6$ , when taken together, form a non-aromatic ring.

3 (original). The compound of claim 1 wherein n is greater than 1.

4 (original). The compound of claim 2 wherein  $\text{R}^1$  is different at each occurrence.

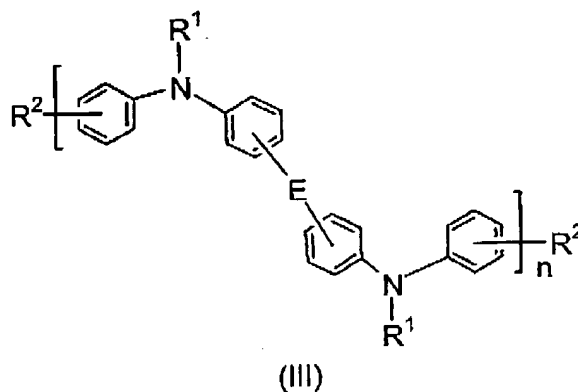
5 (original). The compound of claim 1 wherein  $\text{R}^2$  is H.

6 (original). The composition of claim 5 wherein  $\text{R}^3$  is aryl.

7 (original). The compound of claim 1 wherein  $\text{R}^1$  is selected from phenyl, 1-naphthyl, and 2-naphthyl.

8 (original). The compound of claim 1 wherein  $n = 1$ ,  $\text{R}^2$  is H, and  $\text{R}^3$  is selected from phenyl, 1-naphthyl, and 2-naphthyl.

9 (previously presented). A compound of formula (III):

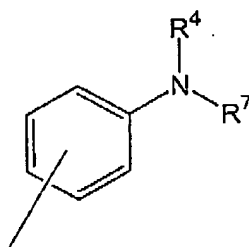


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wherein

n is an integer of at least 1,  $R^1$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl;  $R^2$  is selected from H,  $R^1$ , alkyl, fluoroalkyl, Cl, Br, I and arylamino of formula (II)



(II)

$R^4$  is selected from aryl, H,  $R^1$ , alkyl, fluoroalkyl;  $R^7$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

E is selected from O, S,  $(SiR^5R^6)_m$  wherein m is an integer of 1 to 20,  $(CR^5R^6)_m$  wherein m is an integer of 1 to 20, and combinations thereof, and can be different at each occurrence, wherein  $R^5$  and  $R^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein  $R^5$  and  $R^6$  can, when taken together, form a ~~non-aromatic~~ ring, provided that when E is  $(CR^5R^6)_m$ , and m is 1, then n is greater than 1 and at least one of  $R^5$  and  $R^6$  is not hydrogen or a hydrocarbon.

10 (original). The compound of claim 9 wherein  $R^1$  is different at each occurrence.

11 (original). The compound of claim 9, wherein  $R^5$  and  $R^6$ , when taken together, form a non-aromatic ring.

12 (original). The compound of claim 9 wherein  $R^2$  is H or aryl.

13 (previously presented). The compound of claim 9 wherein  $R^2$  is aryl.

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14 (original). The compound of claim 9 wherein  $R^4$  is aryl.

15 (original). The compound of claim 9 wherein  $R^1$  is selected from phenyl, 1-naphthyl, and 2-naphthyl.

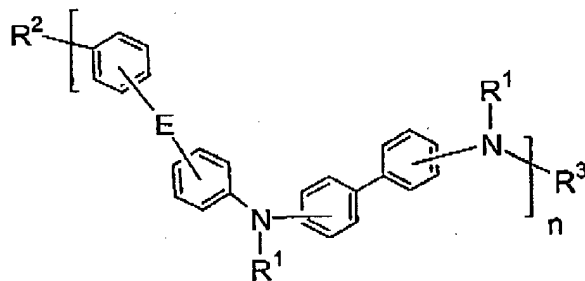
16 (currently amended). The compound of claim 9 wherein  $n = 1$ ,  $R^2$  is H, and  $[[R^3]]$   $R^1$  is selected from phenyl, 1-naphthyl, and 2-naphthyl.

17 (original). The compound of claim 9 wherein at least one aromatic ring in the compound of formula (III) has a substituent selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy.

18 (original). The compound of claim 9 wherein substituents on two neighboring aromatic rings in the compound of formula (III) together form an aromatic or non-aromatic ring.

19 (original). The compound of claim 9 wherein adjacent substituents on at least one aromatic ring together form a fused aromatic or non-aromatic ring.

20 (previously presented). A composition comprising a compound of at least one compound selected from:



(I)

wherein:

$n$  is an integer of at least 1;

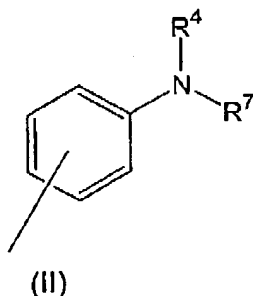
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$R^1$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms;

$R^3$  is selected from H and  $R^1$ ;

$R^2$  is selected from H,  $R^1$ , alkyl, fluoroalkyl, Cl, Br, I and an arylamino group of formula (II),



wherein  $R^4$  is selected from aryl, H,  $R^1$ , alkyl, and fluoroalkyl;

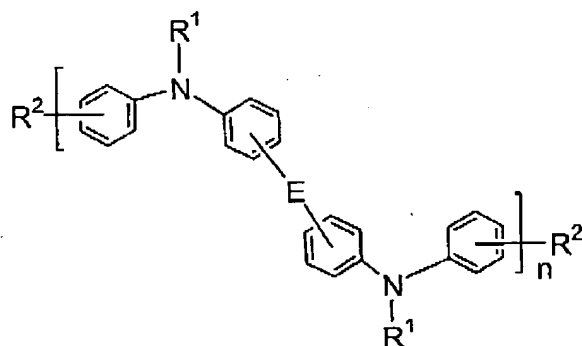
$R^7$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

E is selected from O, S,  $(SiR^5R^6)_m$  wherein m is an integer of 1 to 20,  $(CR^5R^6)_m$  wherein m is an integer of 1 to 20, and combinations thereof, wherein  $R^5$  and  $R^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein  $R^5$  and  $R^6$  can, when taken together, form a ring, provided that when E is  $(CR^5R^6)_m$ , and n is greater than 1 and m is 1, at least one of  $R^5$  and  $R^6$  is not hydrogen or a hydrocarbon.

and

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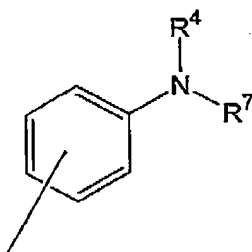
## Patent



(11)

wherein

n is an integer of at least 1, R<sup>1</sup> is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl; R<sup>2</sup> is selected from H, R<sup>1</sup>, alkyl, fluoroalkyl, Cl, Br, I and arylamino of formula (II)



(11)

R<sup>4</sup> is selected from aryl, H, R<sup>1</sup>, alkyl, fluoroalkyl; R<sup>7</sup> is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

E is selected from O, S,  $(\text{SiR}^5\text{R}^6)_m$  wherein m is an integer of 1 to 20,  $(\text{CR}^5\text{R}^6)_m$  wherein m is an integer of 1 to 20, and combinations thereof, and can be different at each occurrence, wherein  $\text{R}^5$  and  $\text{R}^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein  $\text{R}^5$  and  $\text{R}^6$  can, when taken together, form a non-aromatic ring, provided that when E is  $(\text{CR}^5\text{R}^6)_m$ , and n is greater than 1 and m is 1, at least one of  $\text{R}^5$  and  $\text{R}^6$  is not hydrogen or a hydrocarbon.

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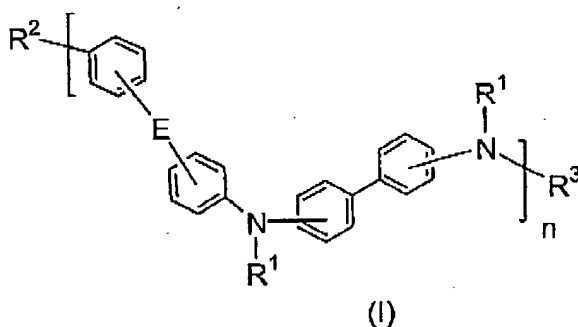
21 (original). An electronic device comprising at least one layer comprising at least one compound selected from the compounds of Claim 1 or Claim 9.

22 (original). The device of Claim 21, wherein the layer is a charge transport layer.

23 (original). The device of Claim 21, wherein the layer is a light-emitting layer.

24 (previously presented). A process for producing a polymer, comprising:

(a) providing two or more compounds having the formulae (I) or (II):



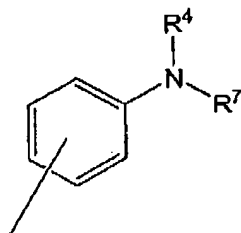
wherein:

$n$  is an integer of at least 1;

$R^1$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms;

$R^3$  is selected from H and  $R^1$ ;

$R^2$  is selected from H,  $R^1$ , alkyl, fluoroalkyl, Cl, Br, I and an arylamino group of formula (II),



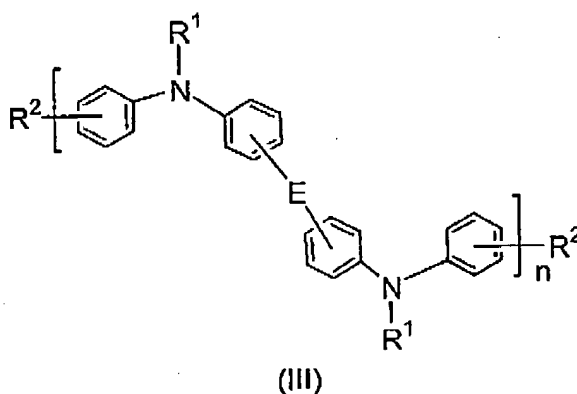
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wherein  $R^4$  is selected from aryl, H,  $R^1$ , alkyl, and fluoroalkyl;  $R^7$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

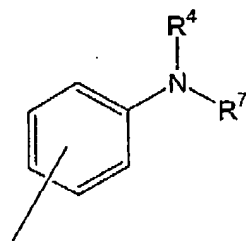
E is selected from O, S,  $(SiR^5R^6)_m$  wherein m is an integer of 1 to 20,  $(CR^5R^6)_m$  wherein m is an integer of 1 to 20, and combinations thereof, wherein  $R^5$  and  $R^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein  $R^5$  and  $R^6$  can, when taken together, form a non-aromatic ring, provided that when E is  $(CR^5R^6)_m$ , and n is greater than 1 and m is 1, at least one of  $R^5$  and  $R^6$  is not hydrogen or a hydrocarbon

or



wherein

n is an integer of at least 1,  $R^1$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl and may be different at each occurrence;  $R^2$  is selected from H,  $R^1$ , alkyl, fluoroalkyl, Cl, Br, I and arylamino of formula (II)





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(II)

$R^4$  is selected from aryl, H,  $R^1$ , alkyl, fluoroalkyl;  $R^7$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

E is selected from O, S,  $(SiR^5R^6)_m$  wherein m is an integer of 1 to 20,  $(CR^5R^6)_m$  wherein m is an integer of 1 to 20, and combinations thereof, and can be different at each occurrence, wherein  $R^5$  and  $R^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein  $R^5$  and  $R^6$  can, when taken together, form a non-aromatic ring, provided that when E is  $(CR^5R^6)_m$ , and n is greater than 1 and m is 1, at least one of  $R^5$  and  $R^6$  is not hydrogen or a hydrocarbon.

(b) reacting said compounds in the presence of a copper, nickel, or palladium catalyst while maintaining said compounds at a temperature of 22°C to 150°C for 24 to 92 hours, to form a first polymer;

(c) treating said polymer with an endcapping group to form a capped polymer; and

(d) further reacting said capped polymer for 24 to 48 hours to produce said polymer.

25 (original). The device of Claim 21, wherein the device is selected from a light-emitting diode, a light-emitting diode display, a laser diode, a photodetector, photoconductive cell, photoresistor, photoswitch, phototransistor, phototube, IR-detector, photovoltaic device, solar cell, transistor or diode.